POND SEALING OR LINING – BENTONITE TREATMENT

DESIGN AND CHECK DATA REQUIREMENTS

The following items must be addressed in the design folder for pond sealing or lining with a bentonite treatment. (This can be part of the design folder for the pond design.)

Table of Contents

List key pages found in the design.

Design Data Summary

Important data recorded and consistent with the appropriate standard (e.g. PA378, PA313), including but not limited to:

- PA One-Call documentation
- Testpit locations & logs
- Soils lab data with seepage estimates and liner calculations
- Sealing/liner alternatives considered
- Cost estimates

Construction Specifications

Enclose the applicable construction specification, PA521C and others (e.g. PA313P, PA378, etc.).

Include any “additional conditions” or items that are site specific or must be defined to supplement the standard specification. (See instructions for use of Specifications PA521C.)

List any special or "by-others" specifications.

Engineering Drawings

TITLE BLOCKS (each sheet)
Operator’s name
Type of operation
County
Designer, drafter, checker
Engineer or Record approval (cover sheet only)

COVER SHEET
Site location
Index of drawings
Job Class
Certification Statement
Signature Block
Reference to specific Standard Drawings

PLAN VIEW SHEETS:
North arrow
Utilities, roads, and bench marks
Scale and legend
Access
Existing structures
Cross section locations
Construction limits
Limits of bentonite treated soil
Borrow and spoil areas
Fencing and safety features

SITE CONTOUR SHEET (Preferably same as Plan View Sheet):
North arrow
Bench marks
Scale
Soils test pit location
Existing structures
Contour lines
Property lines
Legend

CROSS-SECTION SHEETS:
Two sections, minimum
Scale
Soil test pit profiles
Structure/pipe configurations
Access ramp
Earthfill zones and slopes
Leak detection systems
Foundation drainage system
Reference to detail drawings

DETAIL SHEET(S): Sufficient details to install the bentonite treatment; e.g. soil limits and type, mixing depths.

SAFETY:
Utility items
Excavation safety items
PA One-Call documentation
OSHA references as appropriate
Safety features such as signs, grates, gates, fencing, etc.

CONSTRUCTION SEQUENCE: Detail special order of critical construction elements.

Erosion and Sediment Control Plan

Refer to DEP Erosion and Sediment Pollution Control Program Manual. Include pertinent information in the design.

Construction Check Data

QUALITY ASSURANCE PLAN(QAP)
Specific items to inspection and when
Inspector qualifications
Name of inspector(s)
Necessary inspection equipment & tests

ONSITE VISITS: The QAP must include, at a minimum, as applicable to the specific job, onsite visits PRIOR to:

- Start of construction
- Completion of foundation excavation to observe and record the foundation conditions encountered and compare with the conditions assumed in the design.
- Placement of the bentonite to check the subgrade condition

Documentation

The following documents need to be assembled and maintained in the office for the life of the facility:

1. A full set of as-built drawings with:
    a. Items installed as designed; changes shall be recorded in a manner that the As-Built information is obvious, such as in bold and red.
    b. Notes describing the changes will be recorded on all sheets where changes occurred, including initials.
    c. Document the actual foundation and ground water conditions encountered if they differ from the site investigation and design assumptions.
    d. The certification statement, signature and date by a person with construction job approval; however a P.E. must certify the completion of all liquid and semi-solid storage facilities.
2. Design Folder.
3. Survey check notes with final elevations shown in red.
4. Material certifications, etc.
5. Contractor's certification of conformance
6. Photographs, if applicable
7. Records of site visits and significant discussions
8. Other applicable construction records.

Operation & Maintenance Plan

- Precautions to avoid damage to the bentonite treatment liner.
- How to inspect the liner for wear, leaks, erosion, etc.
- Define procedures for repairing the bentonite treatment liner and if included, the soil cover.
- Drawdown restrictions, especially if the liner is covered with soil.
- Explain any monitoring requirements for leak detection systems under waste storage ponds.
- Safety precautions, including emergency action plans for containing and controlling discharge from leak detection systems.
- Other special situations, practices, conditions, and requirements for the individual operation.